

What is claimed is:

1           1.    A frame signal for communicating payloads of  
2    data in a time division multiplexed frame stream, the  
3    frame signal comprising:

4           a first header field including a first frame type  
5    field;

6           a first payload field;

7           a second header field smaller than the first  
8    header field and including a second frame type field;  
9    and

10          a second payload field;

11          wherein the first payload field, first header  
12    field, second payload field, and the second header  
13    field encapsulated in a single frame.

1           2.    The frame signal of claim 1, wherein the  
2    first header field further includes a hopping beam  
3    guard band having a duration encompassing an expected  
4    circuit switching downlink beam hopping delay.







3 a hopping beam guard band have a duration encompassing  
4 an expected circuit switch downlink beam hopping  
5 delay.

1 18. The method of claim 16, wherein transmitting  
2 the first header field comprises transmitting a first  
3 pseudorandom noise synchronization field, wherein  
4 transmitting the second header field comprises  
5 transmitting a second pseudorandom noise  
6 synchronization field, and wherein the first and  
7 second pseudorandom noise synchronization fields carry  
8 identical pseudorandom noise synchronization codes.

1 19. The method of claim 16, wherein transmitting  
2 the first header field further comprises transmitting  
3 at least one of a first payload coding identifier and  
4 a first payload power gating identifier in the first  
5 payload field type indicator, and wherein transmitting  
6 the second header field further comprises further  
7 comprises transmitting at least one of a second  
8 payload coding identifier and a second payload power  
9 gating identifier in the second payload field type  
10 indicator.

1           20. The method of claim 19, wherein transmitting  
2 the first payload coding identifier comprises  
3 transmitting one of a heavy or light coding  
4 identifier, and wherein transmitting the second  
5 payload coding identifier comprises transmitting one  
6 of a heavy or light coding identifier.

1           21. The method of claim 20, wherein transmitting  
2 the first payload power gating identifier comprises  
3 transmitting one of a first payload power gate  
4 identifier and a frame power gate identifier, and  
5 wherein transmitting the second payload power gating  
6 identifier comprises transmitting one of a second  
7 payload power gate identifier and the frame power gate  
8 identifier.

1           22. A downlink frame processing module  
2 comprising:

3           an outer coder;

4           an inner coder coupled to the outer coder, the  
5 inner coder including a coded data output; and



3 includes a hopping beam guard band have a duration  
4 encompassing an expected circuit switching beam  
5 hopping delay.

1 26. The downlink frame processing module of  
2 claim 22, wherein the first header field and the  
3 second header field include an identical pseudorandom  
4 noise synchronization code.

1 27. The downlink frame processing module of  
2 claim 22, wherein the first payload field type  
3 indicator includes at least one of a coding identifier  
4 and a power gating identifier.

1 28. The downlink frame processing module of  
2 claim 27, further comprising a data memory coupled to  
3 the outer coder.

1 29. The downlink frame processing module of  
2 claim 28, where the data memory stores 53 bytes ATM  
3 cells.

1 30. A communication signal comprising:

2 368 Binary Phase Shift Keyed (BPSK) first header  
3 symbols followed by 7552 Quadrature Phase Shift Keyed



4 (QPSK) first payload symbols, followed by 16 QPSK  
5 flush symbols, followed by 96 BPSK second header  
6 symbols, followed by 7552 QPSK second payload symbols,  
7 followed by 16 QPSK flush symbols.

1 31. The communication signal of claim 30,  
2 wherein the first header comprises 114 guard band  
3 symbols, 64 first pseudorandom noise synchronization  
4 symbols, 32 first frame type symbols, 32 masterframe  
5 count symbols, and 64 subframe count symbols, and  
6 wherein the second header comprises 64 second  
7 pseudorandom noise synchronization symbols and 32  
8 second frame type symbols.

1 32. The communication signal of claim 31,  
2 wherein the first and second payload symbols are  
3 concatenated coded using a Reed Solomon outer code and  
4 one of a 3/8 rate and 3/4 rate convolutional code,  
5 interleaved, and scrambled according to a pseudorandom  
6 noise scrambling sequence.

1 33. The communication signal of claim 31,  
2 transmitted at a rate of 196.7 megasymbols per second.



4 concatenated coded using a Reed Solomon outer code and  
5 one of a  $3/8$  rate and  $3/4$  rate convolutional code,  
6 interleaved, and scrambled according to a pseudorandom  
7 noise scrambling sequence.

1 37. The method of claim 35, wherein transmitting  
2 occurs at 196.7 megasymbols per second.